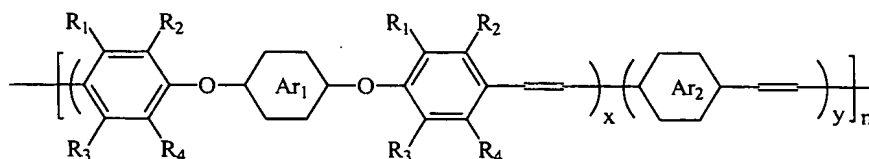


What we claim is:

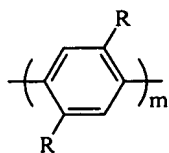
1. An energy-transfer type light-emitting polymer based on poly(p-phenylene vinyl)s, which has the structural unit as represented by the following formula (1):



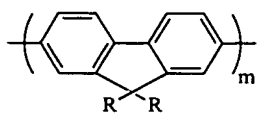
Formula (1)

wherein R_1 , R_2 , R_3 , and R_4 each independently is hydrogen, alkyl, alkoxy, optionally substituted phenyl or naphthyl; x and y each is the content of the luminous element, satisfying $0 < x \leq 1$, $0 \leq y < 1$, $x + y = 1$; there can be one luminous element or more luminous elements having a content of x and so does the luminous element having a content of y ; and $n = 1 - 200$;

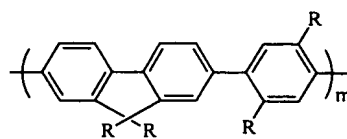
Ar_1 being one or two luminous structural elements selected from a group consisting of formula (2) – formula (29), wherein R , R_1 , R_2 , R_3 and R_4 each independently is hydrogen, alkyl, alkoxy, optionally substituted phenyl or naphthyl; $m = 1 - 10$;



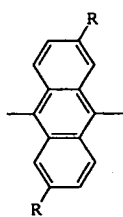
Formula (2)



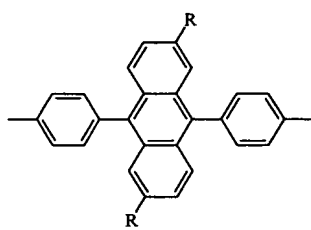
Formula (3)



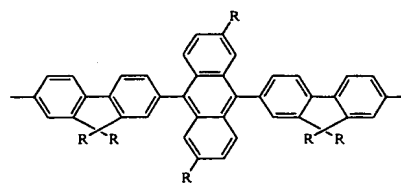
Formula (4)



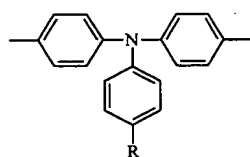
Formula (5)



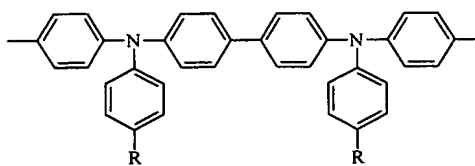
Formula (6)



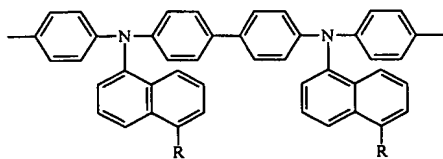
Formula (7)



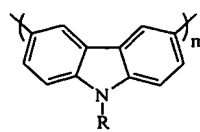
Formula (8)



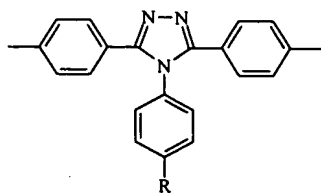
Formula (9)



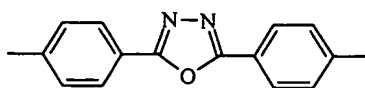
Formula (10)



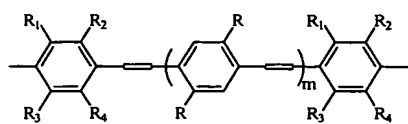
Formula (11)



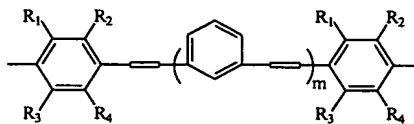
Formula (12)



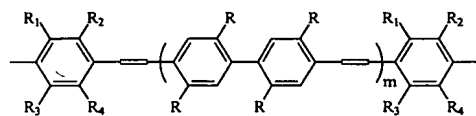
Formula (13)



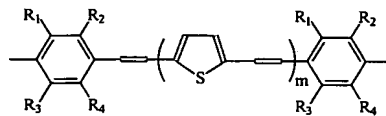
Formula (14)



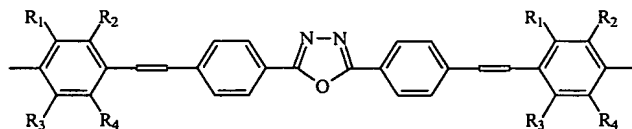
Formula (15)



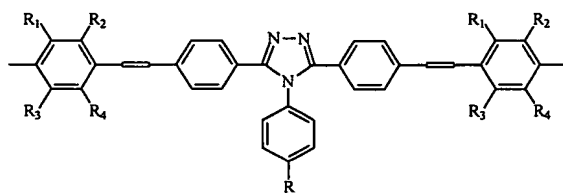
Formula (16)



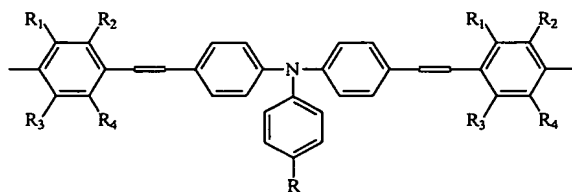
Formula (17)



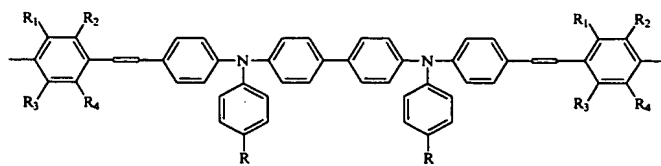
Formula (18)



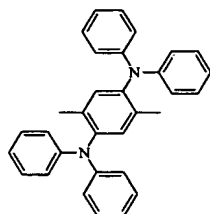
Formula (19)



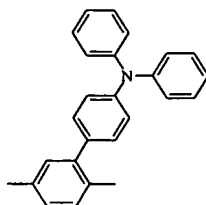
Formula (20)



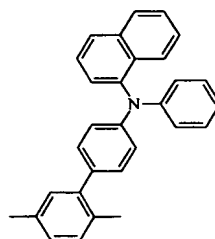
Formula (21)



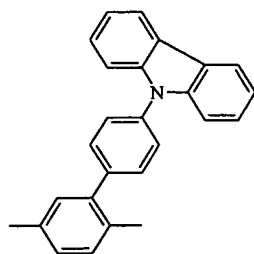
Formula (22)



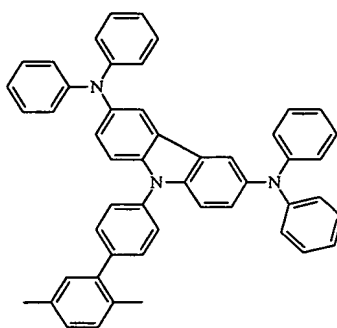
Formula (23)



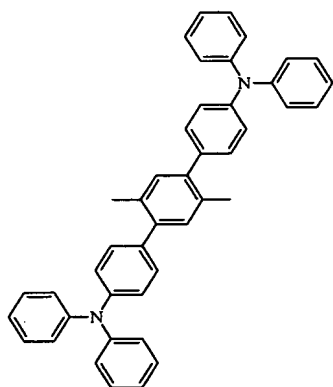
Formula (24)



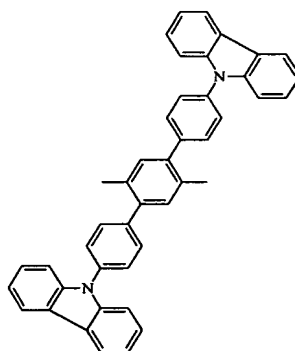
Formula (25)



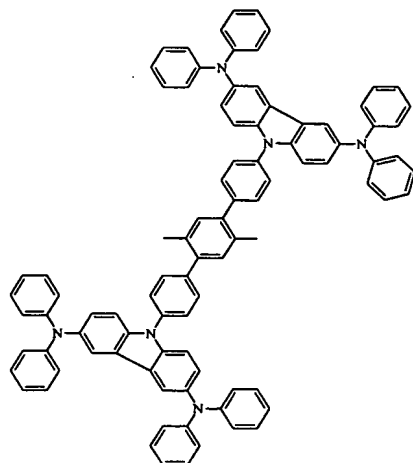
Formula (26)



Formula (27)

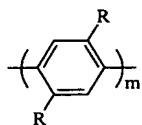


Formula (28)

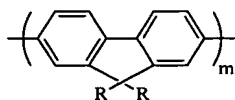


Formula (29)

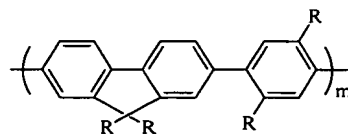
Ar₂ being one or two luminous structural elements selected from a group consisting of formula (30) – formula (44), wherein R each independently is hydrogen, alkyl, alkoxy, optionally substituted phenyl or naphthyl; m=1-10;



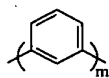
Formula (30)



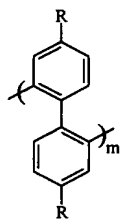
Formula (31)



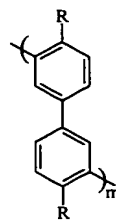
Formula (32)



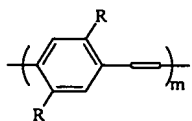
Formula (33)



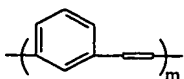
Formula (34)



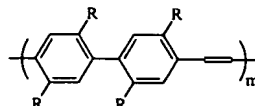
Formula (35)



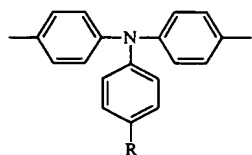
Formula (36)



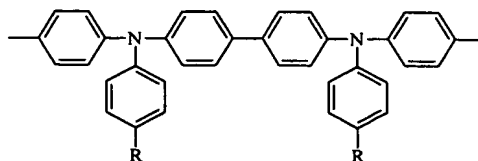
Formula (37)



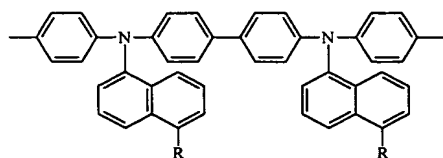
Formula (38)



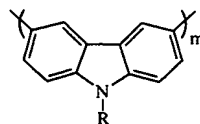
Formula (39)



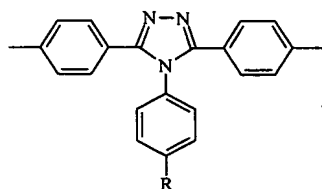
Formula (40)



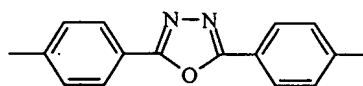
Formula (41)



Formula (42)



Formula (43)

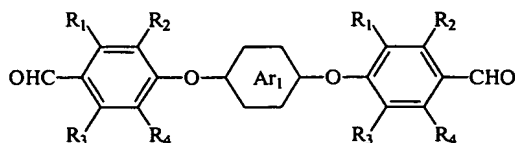


Formula (44)

2. The energy-transfer type poly(p-phenylene vinyl) polymeric luminescent material according to claim 1, wherein in formula (1), R₁, R₂, R₃, and R₄ each independently is hydrogen, C1-18 alkyl, C1-18 alkoxy, 4-(N,N'-diphenylamino)phenyl, 4-(N-phenyl-N'-1-naphthylamino)phenyl, 4-[N,N'-di(1-naphthylamino)]phenyl, 4-carbazolylphenyl, phenyl or naphthyl.
3. The energy-transfer type poly(p-phenylene vinyl) polymeric

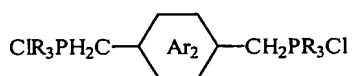
luminescent material according to claim 1, wherein in formula (2) – formula (29), R_1 , R_2 , R_3 , and R_4 each independently is hydrogen, C1-18 alkyl, C1-18 alkoxy, 4-(N,N'-diphenylamino)phenyl, 4-(N-phenyl-N'-1-naphthylamino)phenyl, 4-[N,N'-di(1-naphthylamino)]phenyl, 4-carbazolylphenyl, phenyl or naphthyl.

4. The energy-transfer type poly(p-phenylene vinyl) polymeric luminescent material according to claim 1, wherein in formula (30) – formula (44), R_1 , R_2 , R_3 , and R_4 each independently is hydrogen, C1-18 alkyl, C1-18 alkoxy, 4-(N,N'-diphenylamino)phenyl, 4-(N-phenyl-N'-1-naphthylamino)phenyl, 4-[N,N'-di(1-naphthylamino)]phenyl, 4-carbazolylphenyl, phenyl or naphthyl.
5. The energy-transfer type poly(p-phenylene vinyl) polymeric luminescent material according to claim 1, comprising only one kind of luminous element having a content of x and only one kind of luminous element having a content of y.
6. A process for preparing the energy-transfer type poly(p-phenylene vinyl) polymeric luminescent material according to claim 1, comprising the step of copolymerizing at least one Ar_1 -containing aromatic dialdehyde monomer represented by general formula (45) and at least one Ar_2 -containing aromatic diphosphonium monomer represented by general formula (46) at an equal molar amount,



Formula (45)

wherein R₁, R₂, R₃ and R₄ each independently is hydrogen, alkyl, alkoxy, optionally substituted phenyl or naphthyl; Ar₁ is defined as in above formula (1);



Formula (46)

wherein Ar₂ is defined as in above formula (1); R is phenyl, ethyl, ethoxyl, propyl, butyl, pentyl, hexyl or octyl.